

EXPEDITIONARY LOGISTICS

Strike-Up/Strike-Down

INDUSTRY DAY

**Presented By: Office of Naval Research
11 June 2001**



AGENDA



0830 - 0900	Registration
0900 - 0910	Introduction/Admin Remarks
0910 - 0930	ExLog FNC Background and Objectives
0930 - 1000	Acquisition Program Remarks
1000 - 1030	Requirements Sponsor Comments
1030 - 1045	Break
1045 - 1100	Discussion of EMW
1100 - 1115	Enabling Capabilities
1115 - 1130	Transition to Acquisition
1130 - 1145	Exit Criteria
1145 - 1200	Technology Readiness Levels
1200 - 1215	Discussion of BAA Approach/Timeline
1215 - 1220	ExLog Web Site
1220 - 1250	Break
1250 - 1355	Questions
1355 - 1400	Closing Remarks

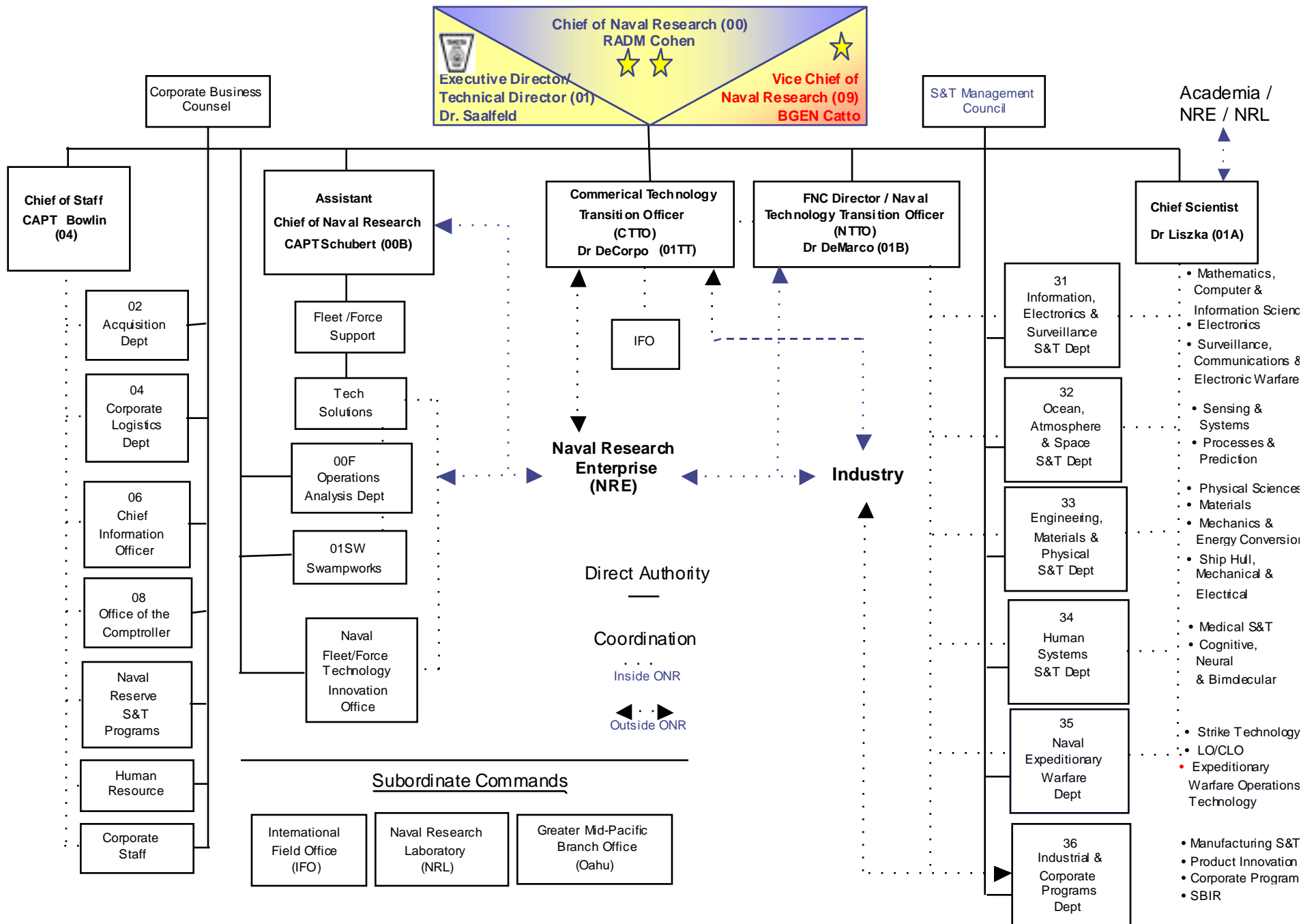


NAVAL S&T MISSION

“To plan, foster and encourage scientific research in recognition of its paramount importance as related to the maintenance of future naval power, forced entry capability, and the preservation of national security.”



ONR Overview





ONR DEPARTMENTS AND DIVISIONS



•Information, Electronics & Surveillance - 31

- Electronics Division
- Mathematical, Computer, and Information Sciences Division
- Surveillance, Communications, and Electronic Combat Division

•Ocean, Atmosphere & Space - 32

- Sensing and Systems Division
- Processes and Prediction Division

•Engineering, Materials & Physical Science - 33

- Physical Sciences S&T Division
- Materials S&T Division
- Mechanics and Energy Conversion S&T Division
- Ship Hull, Mechanical, & Electrical Systems S&T Division

•Human Systems - 34

- Medical S&T Division
- Cognitive, Neural and Biomolecular S&T Division
- Biomolecular and Biosystems S&T Division

•Naval Expeditionary Warfare - 35

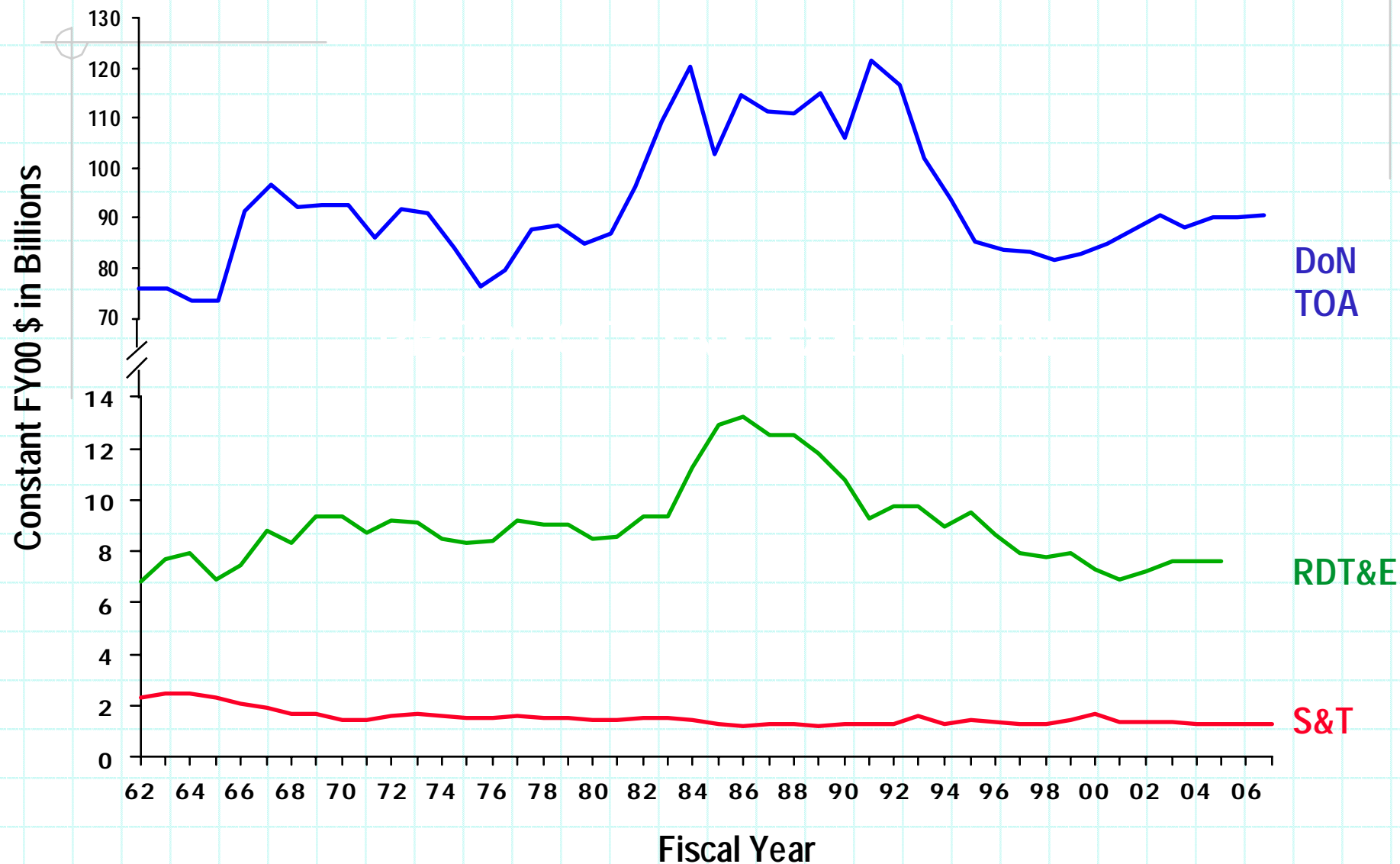
- Strike Technology Division
- Expeditionary Warfare Operations Technology Division

•Industrial and Corporate Programs - 36

- Manufacturing S&T (MANTECH) Division
- Product Innovation Division
- Corporate Programs Division
- SBIR/STTR Division



HISTORY OF DON TOA, RDT&E AND S&T

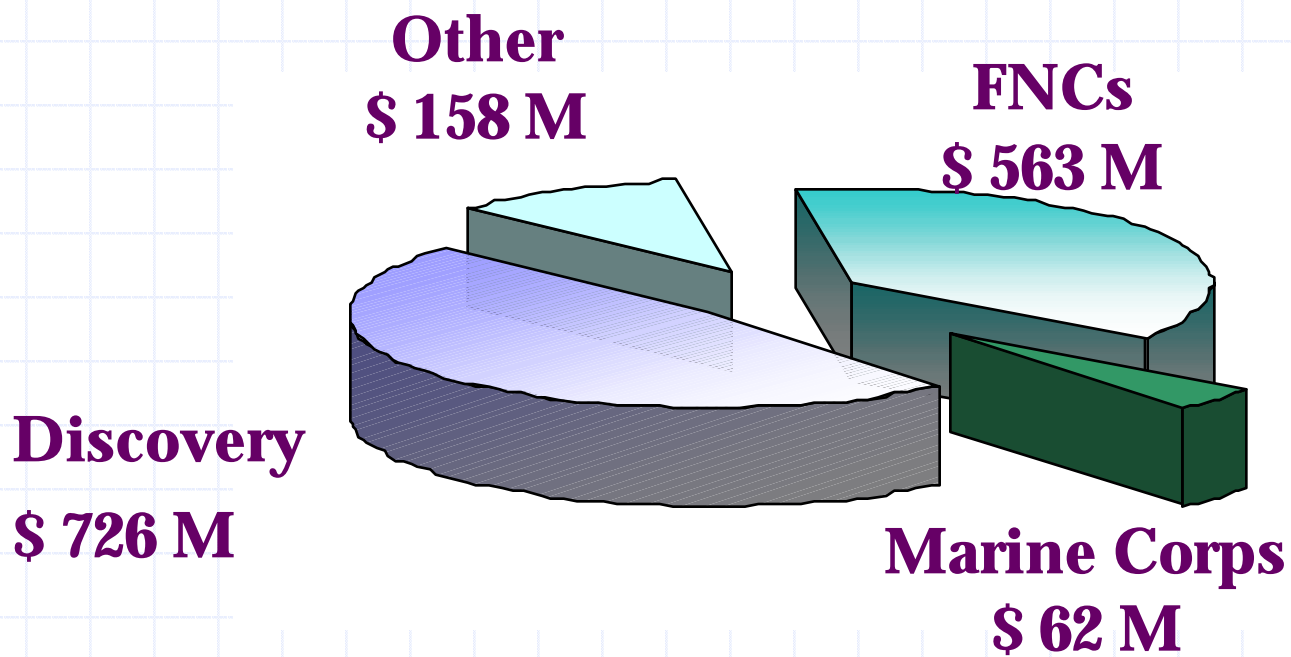




FUTURE NAVAL CAPABILITIES



DoN S&T Funds - FY02



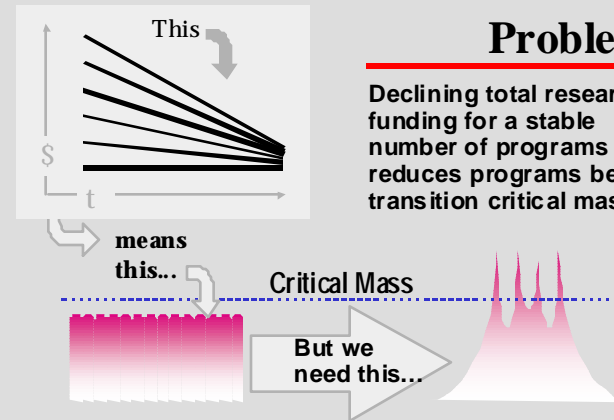
The Way Ahead for Naval S&T

...a look at tomorrow through the porthole of today...

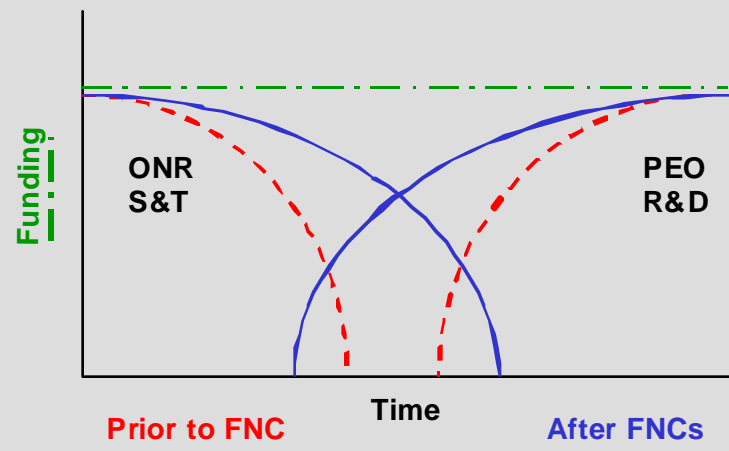


Problem

Declining total research funding for a stable number of programs reduces programs below transition critical mass



"Technology Valley of Death"





EXLOG FNC BACKGROUND & OBJECTIVES



Background

- In 1999 DON adopted a new process for using designated S&T funding to achieve Future Naval Capabilities designed to apply new technology to the problems of expeditionary logistics.
- Each FNC managed by an IPT consisting of representatives from requirements, acquisition, ONR and S&T resource sponsor communities.
- ONR responsible for execution.
- Each investment/product will culminate in well-defined demonstrations leading to transition.

Objectives:

- Focus is on delivering capabilities to the operational forces (transition in FY 04-06).
- Provide significant technology options and operating concepts to meet Dept. of the Navy capability.



IPT MEMBERSHIP



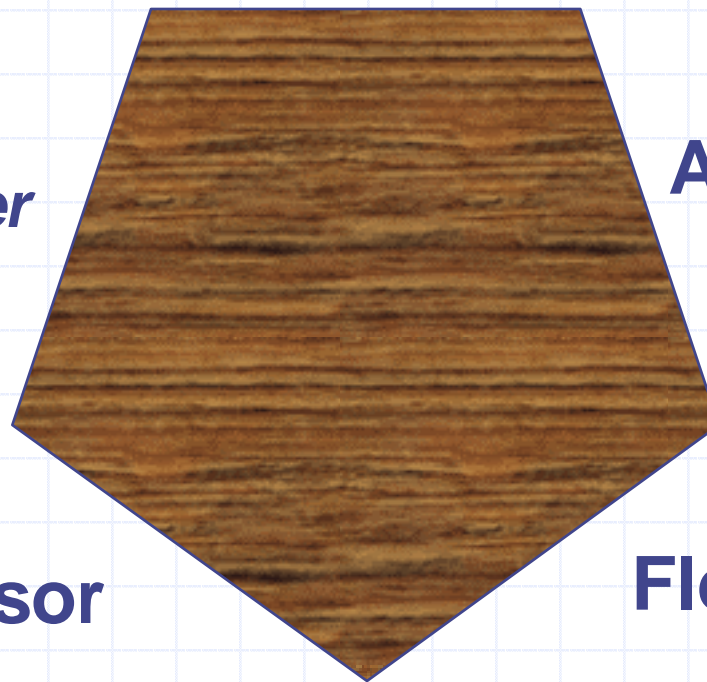
Requirements Rep
Chair (N- / M-Code)

S&T Rep
Execution Manager
(ONR)

Acquisition Rep
Transition Lead
(PEO/SYSCOM)

Resource Sponsor
Rep (N911)

Fleet / Force Rep
(CLF /CPF)





SUMMARY



- **New process responds to prioritized desired capabilities**
- **Process enables significant influence by Requirements / Acquisition on S&T direction**
- **IPTs resulted in significantly improved cross-organizational communications**
- **Transition opportunities coming into focus**
- ◆ **Next: Ensure dialogue during execution**



Science, Technology, and Acquisition



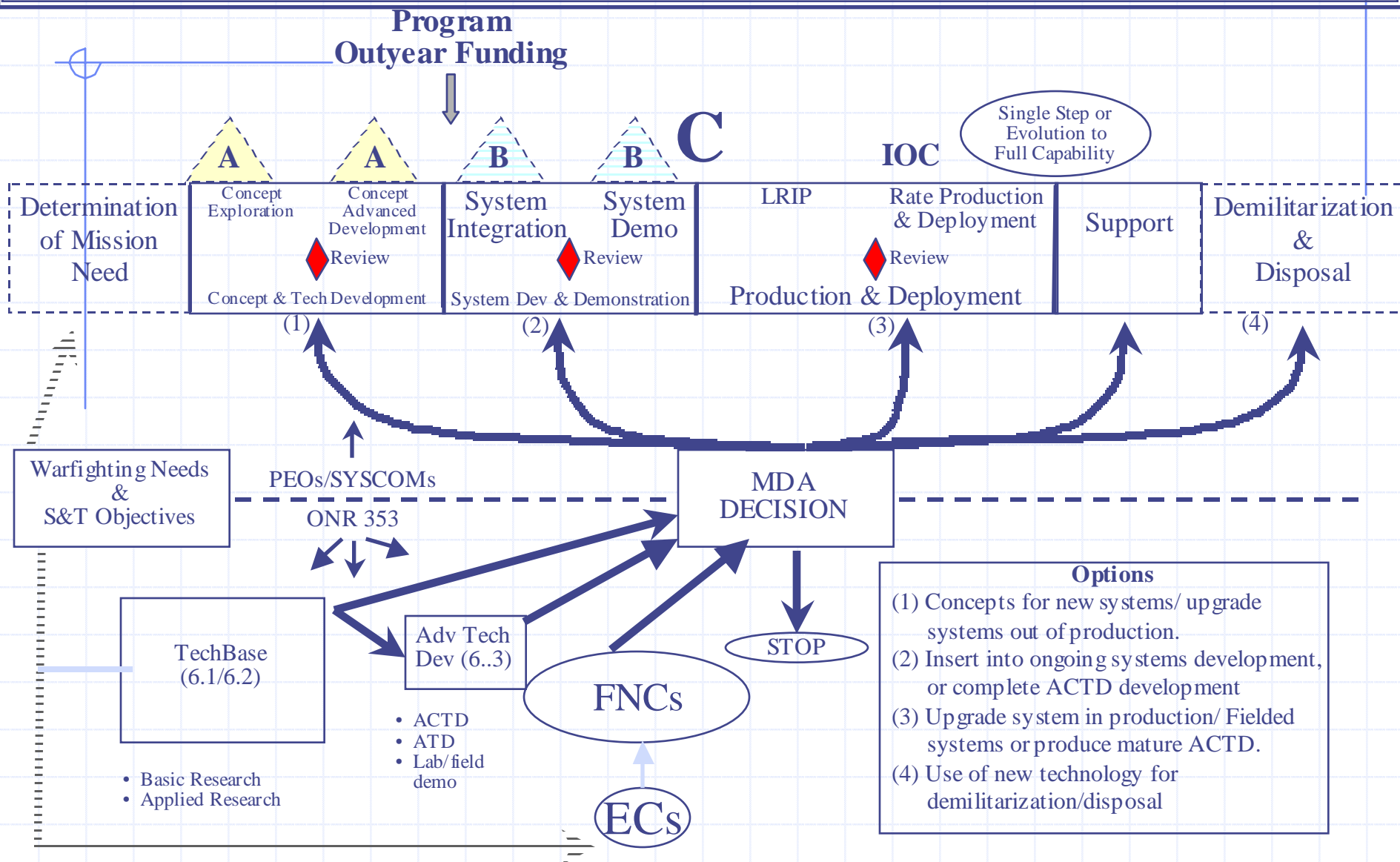
SCIENCE AND TECHNOLOGY



Phase	Funding	Question	Products
Basic Research	6.1	Does it exist? How does it work?	<ul style="list-style-type: none">• Science principles• Discoveries
Applied Research	6.2	What does it do? Will it Work?	<ul style="list-style-type: none">• New Components
Adv. Technology Development & Demonstration	6.3	How well does it work? How much better	<ul style="list-style-type: none">• Prototypes• Demonstrators
Warfighting Experiment	6.3	How can we use it?	<ul style="list-style-type: none">• TTP's• Concept validation
Pre-Acquisition	6.3	How do we reduce risk? Should we buy it?	<ul style="list-style-type: none">• ROI• COA• Transition Plans



S&T LINKAGE TO THE ACQUISITION PROCESS

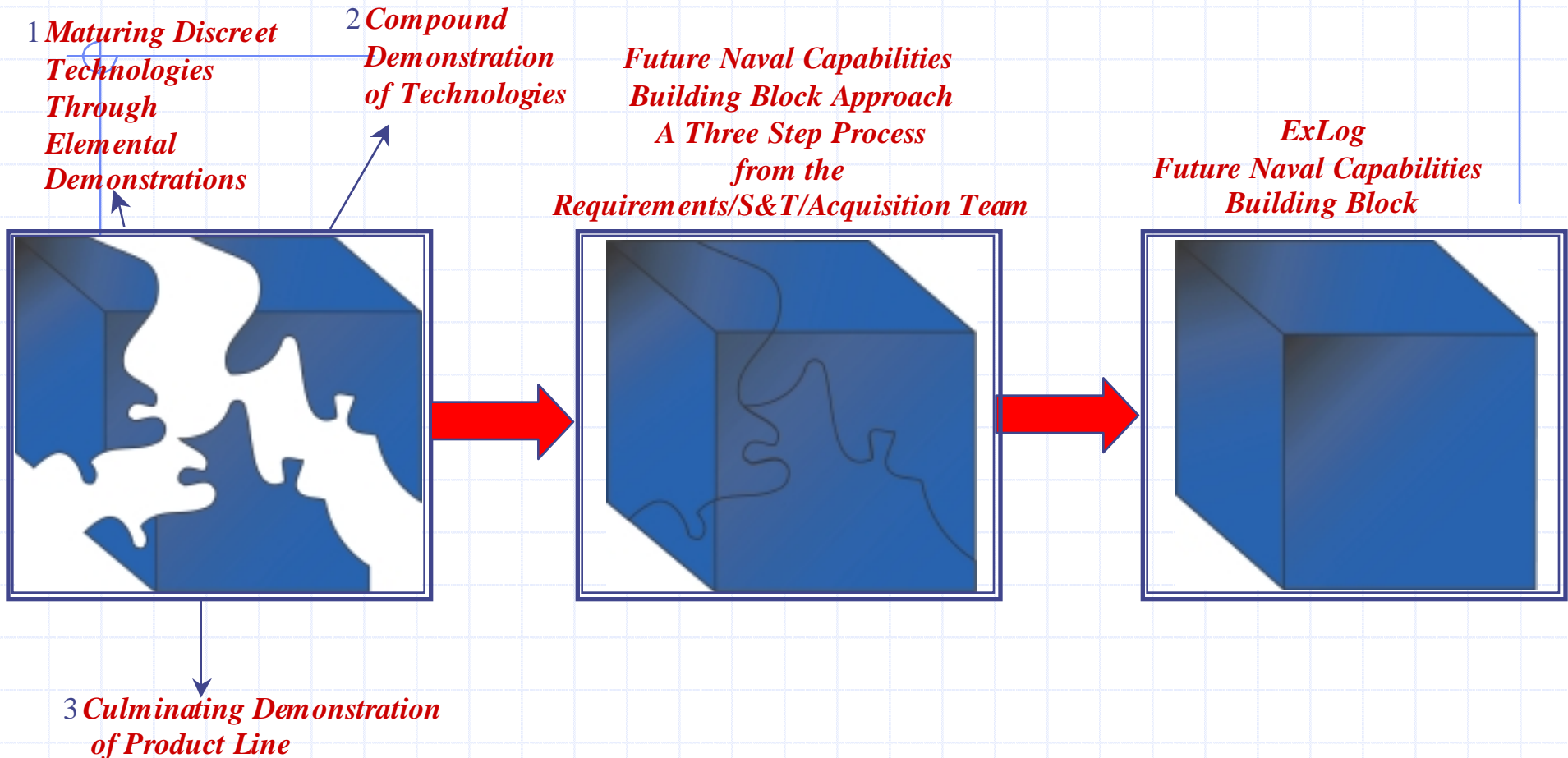




ExLog FNC Taxonomy



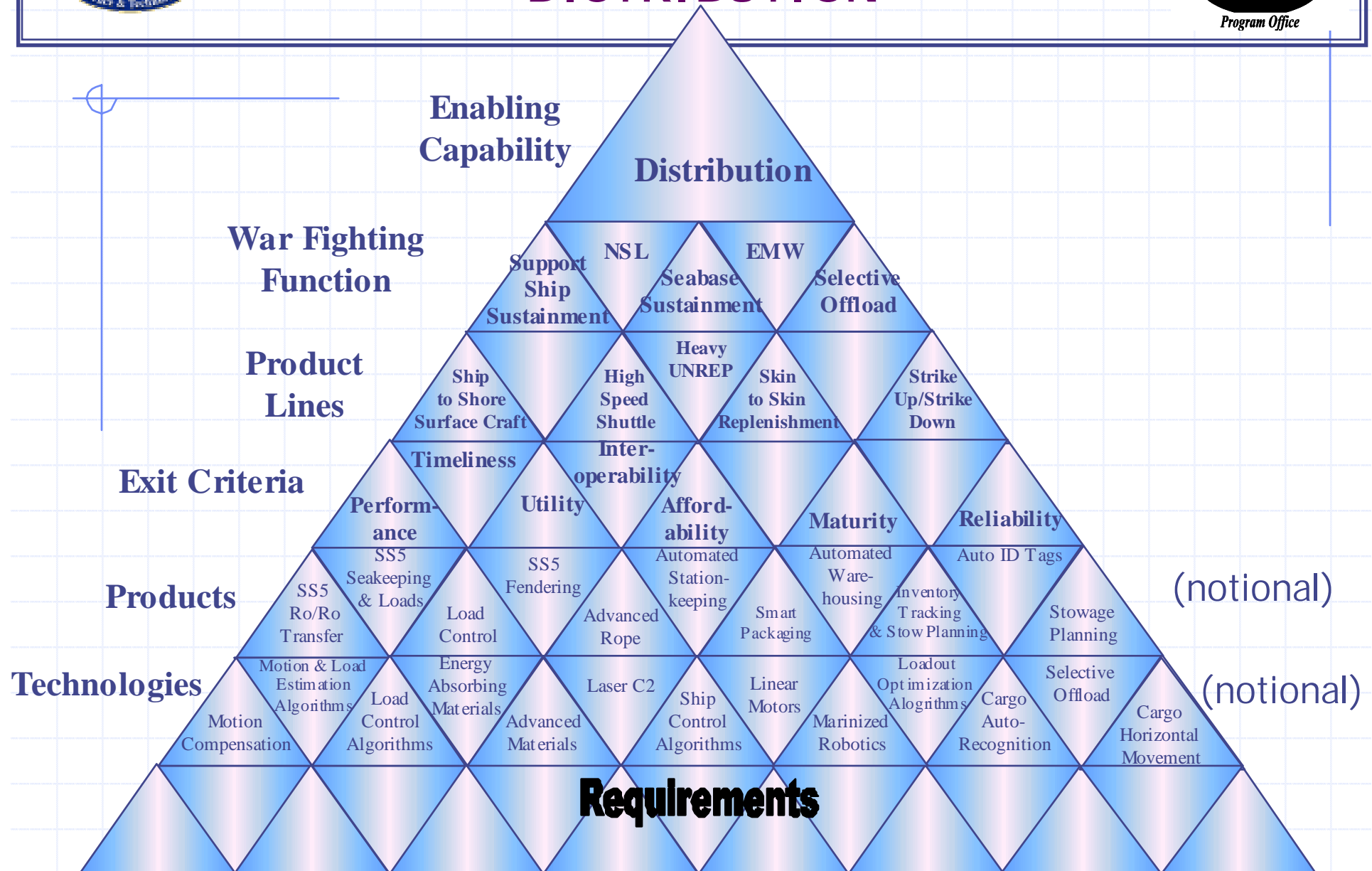
PRODUCT LINE EXECUTION



The ExLog FNC Product Lines Are Executed Through a Building Block Approach, Maturing Discreet Technologies Into Products Through Elemental Demonstrations, and Then Maturing the Products Into the Product Line Through Compound Demonstrations, and Finally Showing the Operational Contribution of Each to Naval Logistics Through Carefully Constructed Culminating Demonstrations.

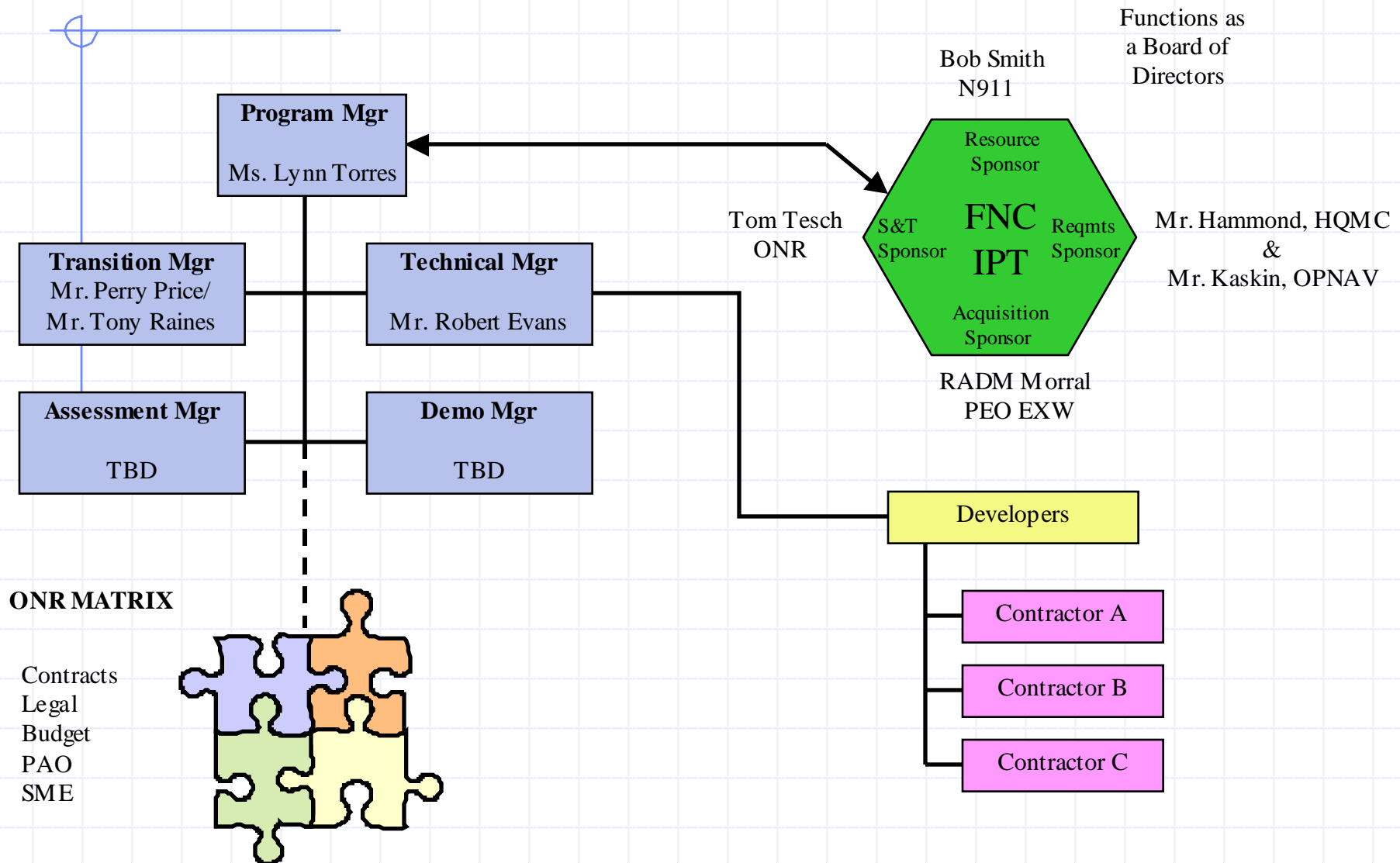


TAXONOMY OF EXLOG FNC – DISTRIBUTION





EXLOG FNC SUSD PROGRAM ORGANIZATION





PROGRAMMATIC RELATIONSHIPS



OPNAV & HQMC

ONR

PEO EXW
PEO Carriers

ADVOCACY

EXECUTION

ACQUISITION

IDENTIFY
REQUIREMENTS

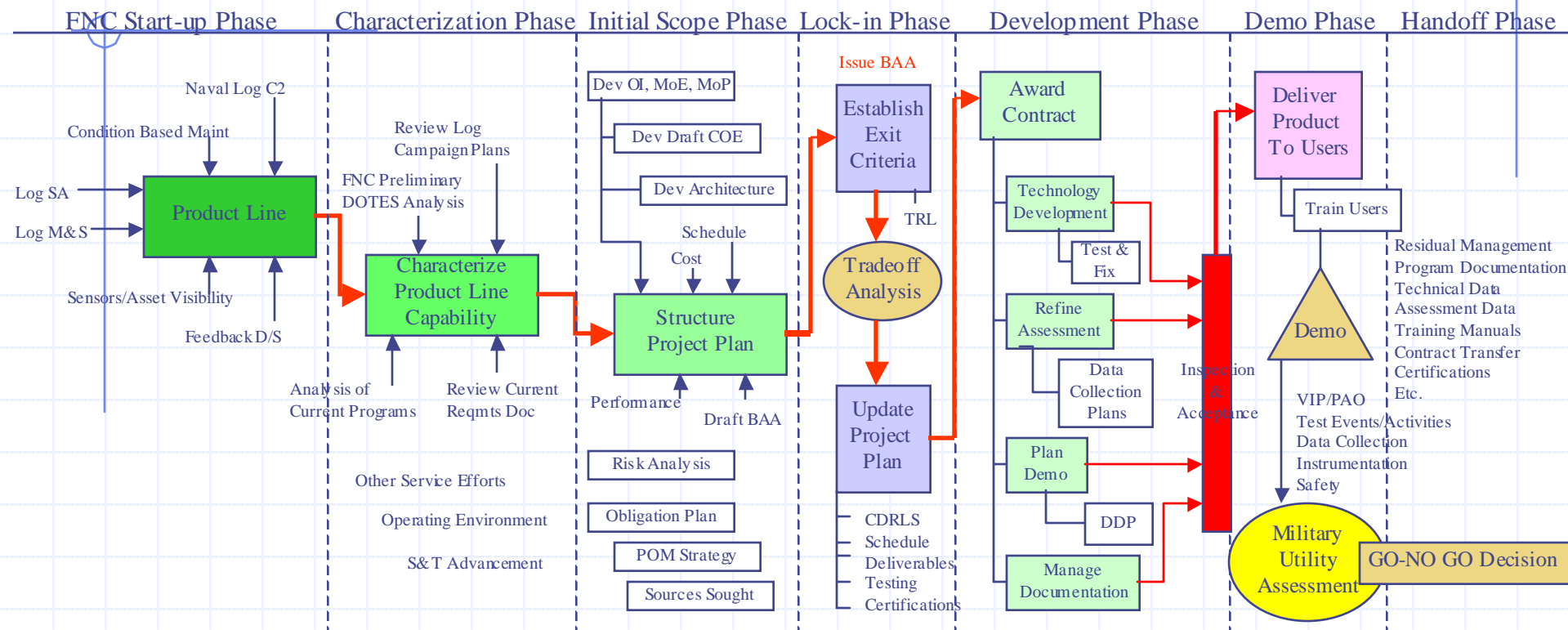
DEVELOP, DEMO AND
TRANSITION SCIENCE
& TECHNOLOGY

PROCURE, FIELD &
SUPPORT NEW CAPABILITIES

Operational Forces



VISUALIZATION OF THE FNC PROCESS





ACQUISITION PROGRAM COMMENTS



PEO Aircraft Carriers



REQUIREMENTS SPONSOR COMMENTS



OPNAV N42

BREAK



DISCUSSION OF EXPEDITIONARY MANEUVER WARFARE (EMW)



EMW is a future Naval concept of Strategic Agility, Operational Reach and Tactical Flexibility.

Limited Logistics Footprint Ashore.

Naval Forces can provide sustained presence without having to occupy another nation's sovereign soil.

Sea-based, self-contained, and self-sustaining Naval forces are initially unconstrained by regional infrastructure requirements or restrictions by other nations.

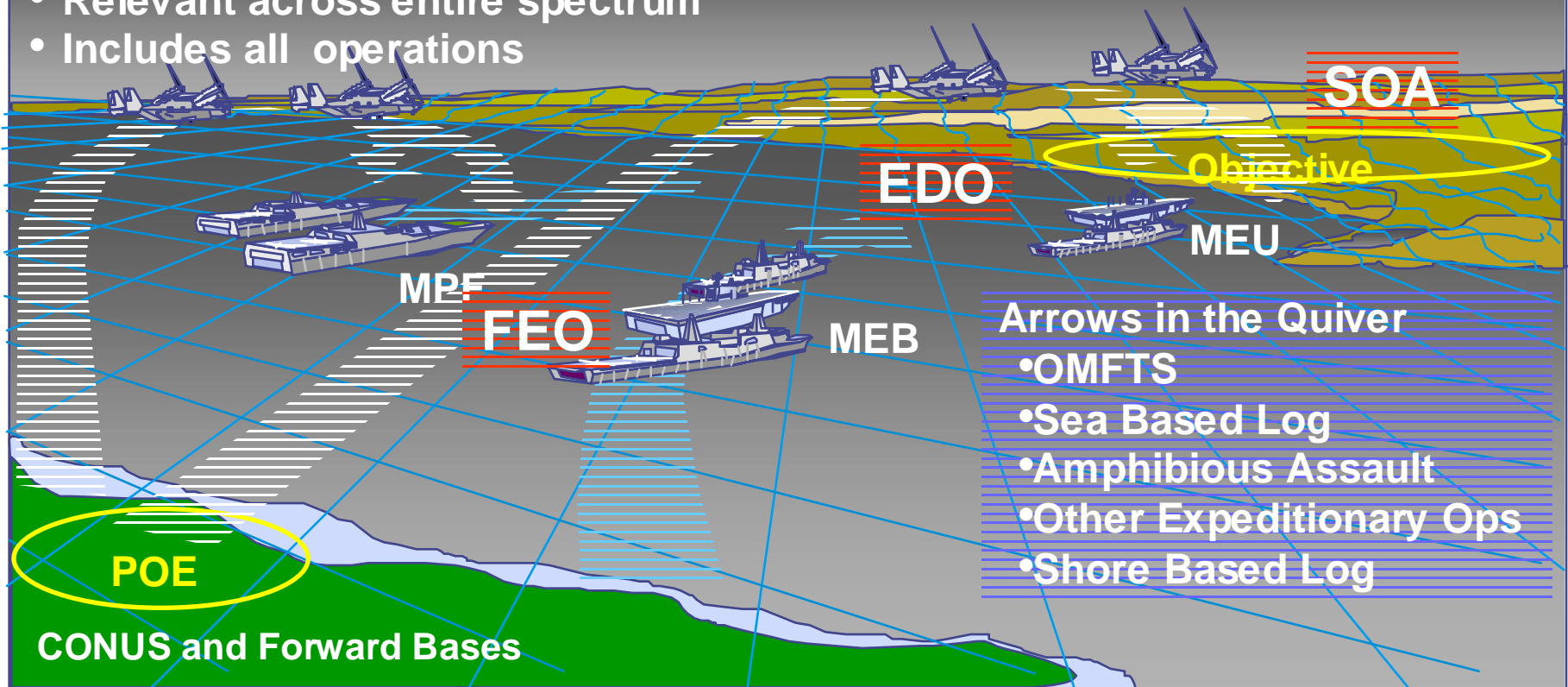
EXPEDITIONARY MANEUVER WARFARE

Forward
Engagement
Operations

Expeditionary
Decisive
Operations

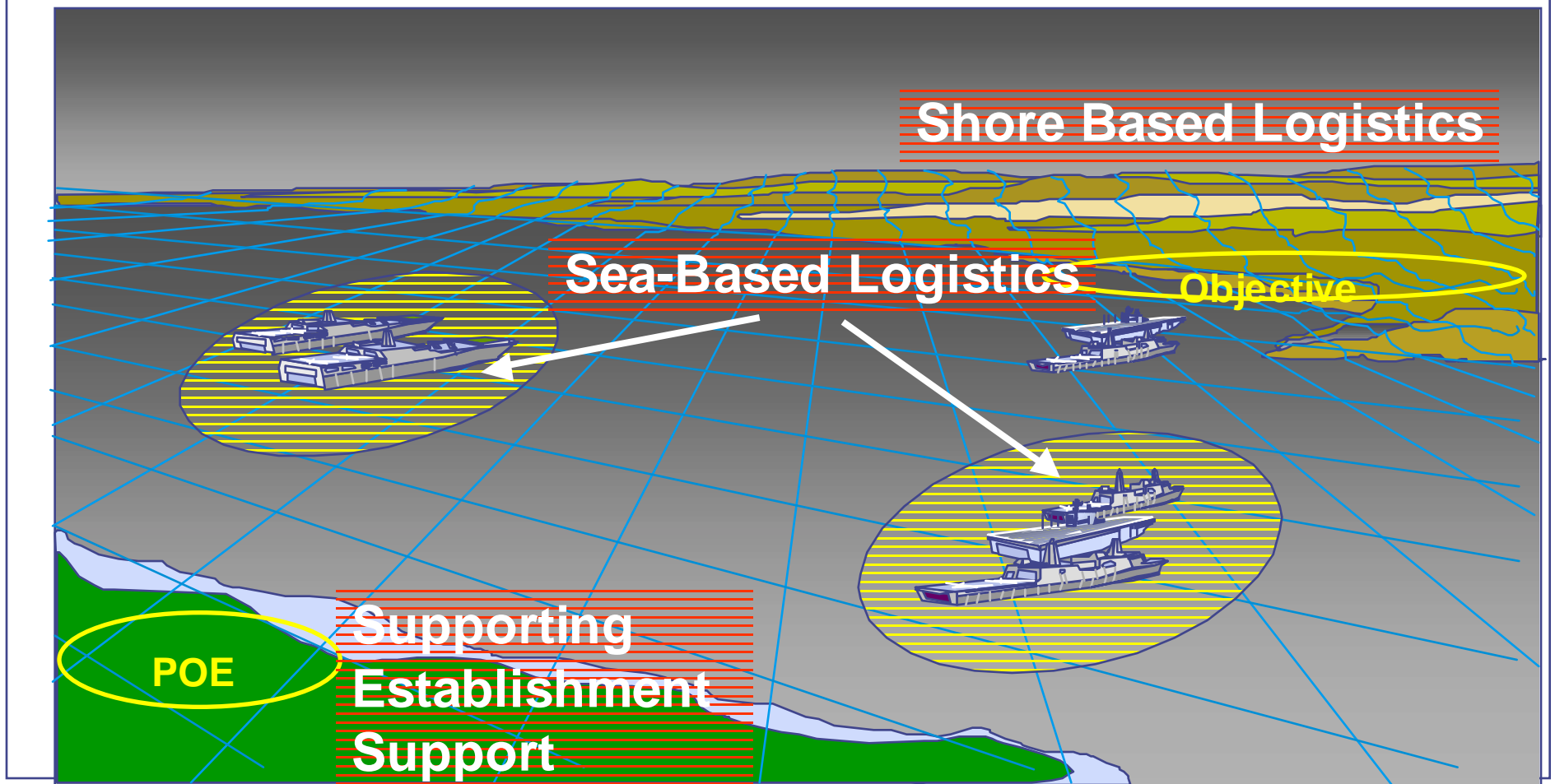
Sustained
Operations
Ashore

- Capstone Concept
- Relevant across entire spectrum
- Includes all operations



Future Naval Logistics Concepts

Naval logistics must be able to support the full operational spectrum through a combination of capabilities.





Challenges Today



TRANSITION TO ACQUISITION



Transition to acquisition is the ultimate objective of the FNC.

Transition to acquisition translates into a fielded capability to the operational forces.

Factors that influence transition include affordability/POM, architecture, interoperability, vulnerability, modularity, etc.

Transition Target Types:

- Combatant

- Combat Logistics Force (CLF)

- MPF (F)



SUCCESSFUL TRANSITION REQUIRES



Novel technology that satisfies a real deficiency - relevant (aligned against MNS/ORD).

Execution plan that integrates transition into both the technical and business approach.

Supporting documentation to continue development, perform life cycle management, manage configuration, assess design and performance, perform LCCE, etc.

Compliant with appropriate orders, directives, policies, and architectures.

Ship Operators must like it , want it.

A BUDGET LINE IN THE POM.



CAPABILITIES



Workload Reduction.

Improved Cargo Transfer Capacity.

Restricted by manload or 4,000 lb forklift.

Improved Cargo Transfer Rate.

Includes Retrograde handling.

Material Available for Issue.

Selective Offload.



TECHNICAL CHALLENGES



At-Sea Environment

Space Constraints

Space/Weight Integration with ship design/modification

Ship Motions

- Static List and Trim

- Dynamic Roll/Pitch/Heave motions and Accelerations

Ship Flexure

Maintaining Watertight Integrity/Firefighting

Reliability/Maintainability/Affordability/Ease of Operation

Packaging

Eventual Regulatory Approval (ABS/USCG/NAVSEA OP 4)



CARGO DELIVERED VIA UNREP



CONREP



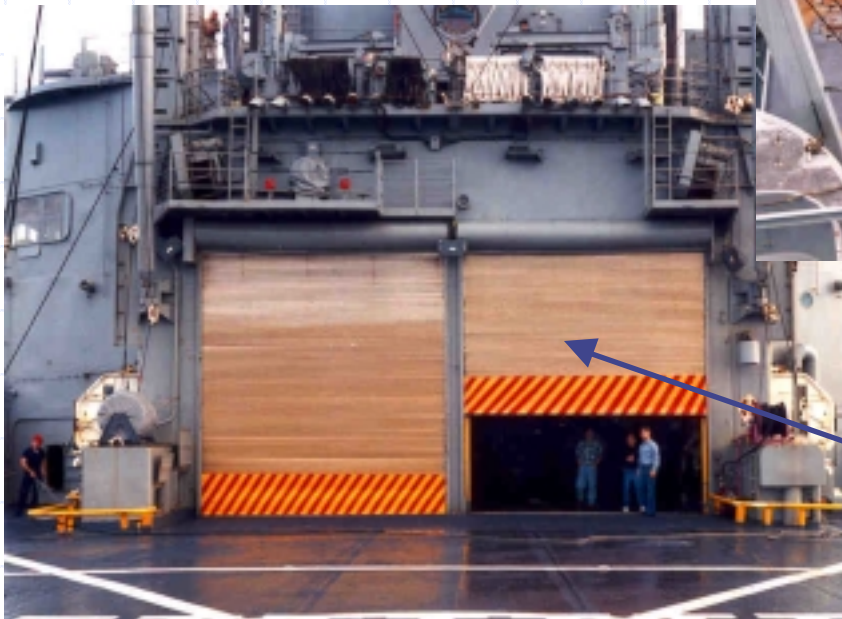
VERTREP



TRANSITION THROUGH WATERTIGHT CLOSURES TO DECK



Working Deck Area



Watertight Closure



INTEGRATION INTO THE SHIP



Interior Passage to/from
UNREP Station

Hold Interferences





MOTIONS IN A SEAWAY





OPERATIONS IN A SEAWAY





EXIT CRITERIA



Exit Criteria provides decision format for transition to acquisition.

Exit Criteria is negotiated between FNC and acquisition community, approved by FNC IPT.

Exit Criteria will define minimum functionality and performance necessary for transition.

Proposed Exit Criteria Follows. All criteria may not apply to all proposed technologies.



PROPOSED EXIT CRITERIA



Criteria	Current Capability	Minimum	Goal
Increased Handling System Capacity	Various, many ships require manhandling. 4,000 lb forklifts are common.	Handle a variety of Naval packaging up to 6,000 lbs	Handle a variety of Naval packaging up to 12,000 lbs
Increased Handling System Speed	Various, many ships require manhandling.	Support throughput of 414 pallets in 6 hours.	Support throughput of 414 pallets in six hours and 100 QUADCON containers in 6 hours (not concurrently).
Handling System Operating Conditions	Current shipboard systems do not have a consistent operating condition definition.	Able to operate continuously with the rated load with a 15° static heel and maintain load control with a 30° static heel.	Same
Workload Reduction	Current systems are manpower intensive, combatant type ships typically require manhandling teams.	Support reduction of 25% based on current Transition Sponsor OPTEMPO and manning.	Support reduction of 75% based on current Transition Sponsor OPTEMPO and manning.



PROPOSED EXIT CRITERIA



Criteria	Current Capability	Minimum	Goal
Stowage Systems	Currently, the majority of ships can stow fully loaded pallets.	Ability to stow a variety of Naval packaging with weights up to 6,000 lbs using minimal manpower	Ability to stow a variety of Naval packaging with weights up to 12,000 lbs using minimal manpower.
Stowage Conditions for Equipment or Packaging.	Current shipboard systems were designed for the specific ship seaway response.	Ability to withstand 45° of static roll plus a 0.5 g lateral acceleration at the rated load of the stowage device or packaging.	Same
Stowage Density	Current stowage density supports ship needs.	Maintain a Stow Factor based on total volume of stowed material and hold usable volume.	Maintain a Stow Factor based on total volume of stowed material and hold usable volume.
Weight/Volume Reduction for Handling and Stowage Systems	Weight/Volume of existing systems fits within ships needs.	Reduction of Weight and/or Volume of 25% over system being replaced.	Reduction of Weight and/or Volume of 50% over system being replaced.



PROPOSED EXIT CRITERIA



Criteria	Current Capability	Minimum	Goal
Power Reduction for Handling Systems	Power requirements for existing systems can be supported by ship power.	Reduction of Power of 25% over the system being replaced.	Reduction of Power of 50% over the system being replaced.
Selective Offload	None.	Ability to call up any specific package (container, pallet, etc.) for breakout of required load.	Ability to call up any specific load.
Reliability	Current handling systems such as ordnance elevators and vertical package conveyors have a history of unreliable operation.	Exact system reliability parameters will be negotiated with Transition Sponsor to suit their needs.	Exact system reliability parameters will be negotiated with Transition Sponsor to suit their needs.
Maintainability	Current handling systems such as ordnance elevators and vertical package conveyors have a history of high maintenance.	Exact system maintainability parameters will be negotiated with Transition Sponsor to suit their needs.	Exact system maintainability parameters will be negotiated with Transition Sponsor to suit their needs.

Technology Readiness Level

DOD 5000.2-R Appendix A6-4

• SYSTEM QUALIFICATION	9	Actual Application of the Technology in It's Final Form and Under Mission Conditions.
• SYSTEM/SUBSYSTEM DEVELOPMENT	8	Technology Has Been Proven to Work in It's Final Form and Under Expected Conditions.
• TECHNOLOGY DEMONSTRATION	7	Prototype Near or at Planned Operational System. Major Step From Level 6, Requiring the Demonstration of an Actual Prototype in an Operational Environment.
• TECHNOLOGY DEVELOPMENT	6	Representative Model or Prototype System, Which Is Well Beyond the Breadboard Tested 5 Is Tested in a Relevant Environment
• RESEARCH TO PROVE FEASIBILITY	5	Fidelity of Breadboard Technology Increases Significantly Enough to Justify Being Ready for Testing in a Simulated Environment
• BASIC TECHNOLOGY RESEARCH	4	Basic Technology Components Are Integrated to Establish That the Pieces Will Work Together.
	3	Active Research and Development Is Initiated. This Includes Analytical and Laboratory Studies to Physically Validate Analytical Predictions of Separate Elements of Technology.
	2	Invention Begins. Once Basic Principles Are Observed, Practical Applications Can Be Invented. The Application Is Speculative and There Is No Proof of Detailed Analysis to Support the Assumption.
	1	Lowest Level of Technology Readiness. Scientific Research Begins to Be Translated Into Technology's Basic Properties.



Execution Roles in the ExLog FNC



ExLog FNC

Development Demonstration

Assessment

Transition



BAA APPROACH & OVERVIEW



BAA will be finalized based on Industry Comments.

Awards will primarily be in the form of contracts.

Awards will be one year with potential for follow on options.

ONR reserves the right to make single or multiple awards for each technology area of interest or to make no awards in a given technology area of interest.

ONR reserves right to make multiple awards and to down select for continued funding.

Contracting terms are flexible.



TWO STEP SELECTION PROCESS



First Step – White Paper Submission

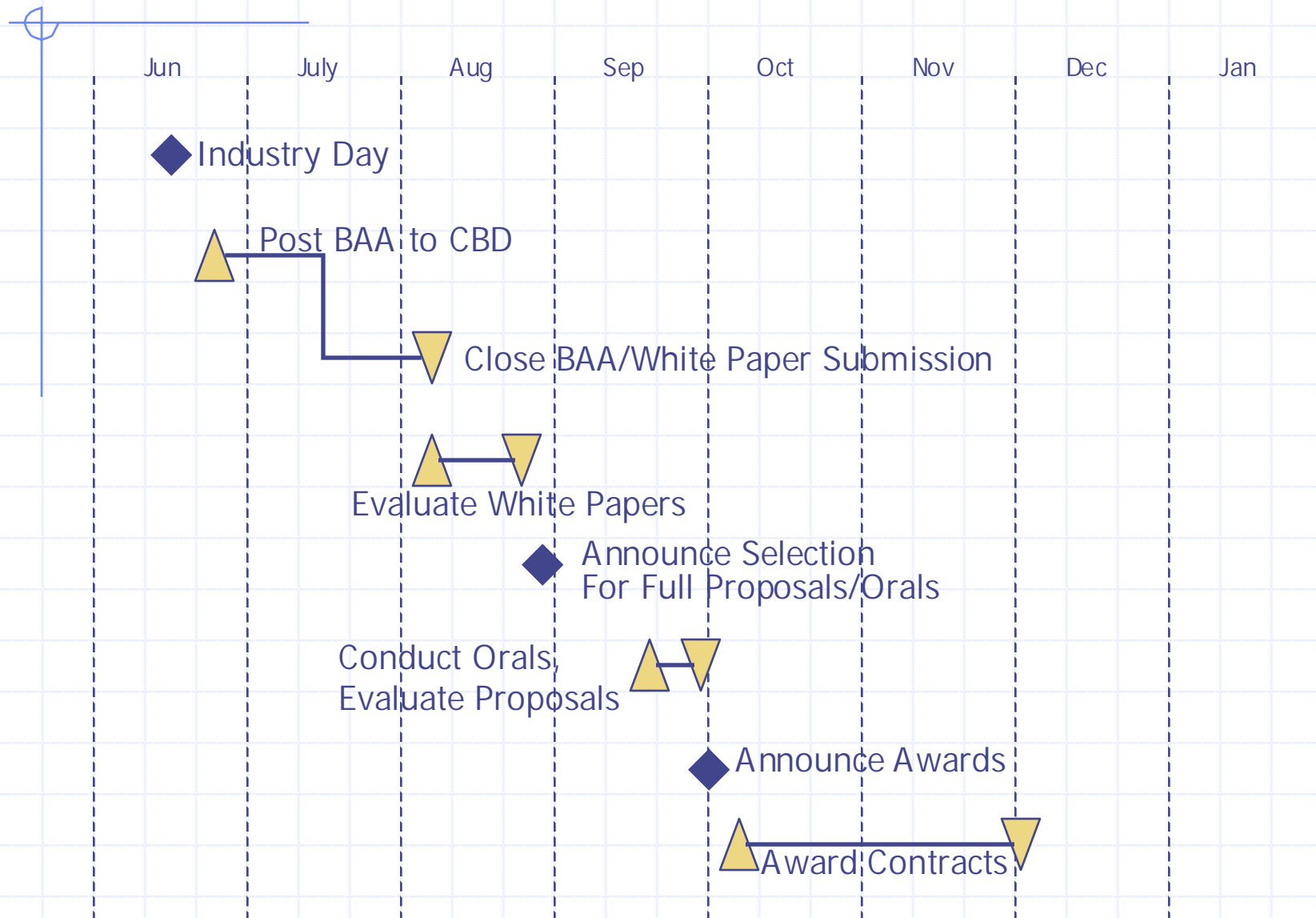
- Standard BAA submission outline and procedures
- Stick to the guidance contained in the BAA and in read ahead material for this presentation

Second Step – Full Proposal/Orals

- Necessary step added to reduce transition risk
- Increase chances for a usable product
- Better understand Offerors approach
- Meet principle investigator/key personnel



POA&M LEADING UP THROUGH CONTRACT AWARD





TECHNOLOGY FOCUS AREAS



- 1) Load Handling and Movement Equipment
- 2) Cargo Stowage Systems
- 3) Improved Stowage Density/Selective Offload

Proposed Technologies may span any combination of above Focus Areas

NO "PREFERRED" TECHNOLOGY SOLUTION SET



COORDINATING INSTRUCTIONS



Offerors are encouraged (but not required) to team on their proposals.

ONR will utilize TPM/EV techniques to support required decision points, monitor progress and determine second year of funding.

ONR will require In-Progress Reviews and established deliverables/milestones.

Documentation (CDRLs) supporting the design effort can be expected as a part of this BAA effort.



DETAILED PROGRAM PLAN



Detailed Program Plan will be required by BAA

To be delivered NLT 30 days after contract award

Plan will require:

Detailed WBS in Microsoft Project

Traceable Monthly Events

Exit Criteria

Risk Management/Reduction/Fallback



EXPEDITIONARY LOGISTICS WEB SITE



<http://www.onr.navy.mil/expedlogisfnc/>

ExLog FNC Directory.

[<http://www.onr.navy.mil/expedlogisfnc/BAA.htm>

Proposers Information Page: Supporting documentation relative to this effort (i.e., BAA, Industry Day Briefing, etc.).

Posting of BAA questions and answers.

All BAA/Contracting questions shall be submitted via email to [duberry@onr.navy.mil], copy to [torresl@onr.navy.mil].

ONR will not respond to BAA/Contracting questions via telephone.

BREAK

QUESTIONS